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MACTEC ENVIRONMENTAL RESTORATION SERVICES, LLC

Spectral Gamma-Ray Borehole
Log Data Report

Log Event A

Borehole 11-01-09

Borehole Information

Farm : AX	**Tank :** AX-101	**Site Number :** 299-E25-104
N-Coord : 41,726	**W-Coord :** 47,520	**TOC Elevation :** 681.64
Water Level, ft :	**Date Drilled :** 12/31/1974	

Casing Record

Type : Steel-welded	Thickness : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 100	

Borehole Notes:
This borehole was drilled in December 1974. It was driven to 100 ft with 6-in. casing. The casing thickness is presumed to be 0.280 in., on the basis of the published thickness of schedule-40, carbon-steel pipe. The zero reference is the top of the borehole pipe that is located on the side of a soil berm, approximately 1.5 ft above the ground surface.

Equipment Information

Logging System : 2	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 05/1996	**Calibration Reference :** GJPO-HAN-5	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number : 1	**Log Run Date :** 08/26/1996	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 0.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 12.5	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 08/27/1996	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 103.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 11.5	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Borehole 11-01-09

Log Event A

Analysis Information

Analyst : E. Larsen

Data Processing Reference : P-GJPO-1787 Analysis Date : 10/31/1996

Analysis Notes :

This borehole was logged in two log runs. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and system efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these verification spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The man-made radionuclide Cs-137 was identified in this borehole. The Cs-137 contamination was detected almost continuously within the upper 32 ft of the borehole. Quantities of Cs-137 (less than 0.5 pCi/g) were also noted at 54.5 ft and the bottom of the borehole (103 ft). The maximum Cs-137 concentration was about 12 pCi/g at the ground surface and about 10 pCi/g within the near-surface continuous zone.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Reports for tanks AX-101 and AX-103.

Log Plot Notes:

Separate log plots show the man-made radionuclide (Cs-137) and the naturally occurring radionuclides (KUT). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL of a radionuclide, which represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.